REMARKS

Applicant appreciates the Examiner's thorough review of its previous response and the withdrawal of the previous rejections. However, Applicant submits that the new rejections presented in the Final Office Action dated June 25, 2008, are also improper and should be withdrawn. Although the Final Office Action cites numerous references to inter-symbol interference (ISI) in the cited Bottomley reference and a few further references to ISI in the cited Reznik reference, neither reference actually discloses or suggests an estimation of "received signal quality based on [a] scaled estimate of inter-symbol interference," as recited in each of the pending claims. Indeed, this is admitted in the present Office Action, at pages 9-10: "[The references] fail to explicitly teach estimating the received signal quality based on the scaled estimate of inter-symbol interference." As will be discussed in more detail below, Reznik does not suggest such estimation, either. In any event, the references cannot be combined to produce the currently claimed techniques for estimating received signal quality in the manner claimed, as neither reference teaches or discusses the scaling of estimated ISI by "a cancellation metric comprising a scalar value representing characterized or measured inter-symbol cancellation performance of [a] receiver."

Applicant wishes to avoid any unnecessary expense and delay associated with an appeal, but is confident that the pending claims would be found to be patentable over the cited references in such an appeal. Accordingly, for at least the above reasons, as more fully detailed below, Applicant respectfully requests reconsideration of the present application and of Applicant's previous responses, and withdrawal of the pending rejections.

Neither Bottomley nor Reznik, alone or in combination, teach or suggest "estimating a received signal quality based on a scaled estimate of inter-symbol interference"

Independent claim 1 is directed to a method that includes "estimating [a] received signal quality based on [a] scaled estimate of inter-symbol interference." Independent claims 17, 31, and 45 are circuit, device, and computer-readable medium claims, respectively, with corresponding limitations.

The Final Office Action admits that the combination of Bottomley and Reznik "fail[s] to explicitly teach estimating the received signal quality based on the scaled estimate of inter-symbol interference." [Final Office Action, pp. 9-10.] The Final Office goes on to allege, however, that "Reznik does <u>suggest</u> estimating the received signal quality based on the scaled estimate of inter-symbol interference," [*Id.* at 10, emphasis added], citing figures 9-11, paragraphs 77 and 101, and Equation 10 of Reznik. This is simply incorrect.

First, the Final Office Action appears to suggest that Reznik's references to generating "soft decisions" and "hard decisions" are somehow the same as the claimed estimating of a received signal quality. A practitioner of ordinary skill in the art would not confuse these distinct processes. Indeed the Final Office Action contradicts itself by asserting that Reznik's process "would have necessitated the measurement of the SIR in order to determine if the interference has been suppressed." [*Id.*] This statement acknowledges that SIR (signal-to-interference ratio), which is quite distinct from "soft" or "hard" decisions, is a widely used metric of signal quality. In fact, Reznik never mentions SIR (or any other received signal quality metric) at all. Furthermore, there is nothing in Reznik that suggests that SIR (or any other received signal quality metric) must be measured to determine whether interference has been successfully suppressed. Indeed, Reznik teaches precisely the opposite – the iterative cancellation process described by Reznik produces vectors that are related to the *residual* interference not canceled by previous iterations; these vectors are used in the next iteration of the interference

cancellation process. [*See, e.g.,* Reznik ¶¶ 0074-76.] Thus, calculation of a signal quality

metric for the <u>received signal</u> is not taught, suggested, or implicit in Reznik. The rejections of all

of the pending claims are thus improper for this reason alone.

Second, neither reference teaches estimation of received signal quality <u>based on the</u>

<u>scaled estimate of inter-symbol interference in the received signal</u>. As noted above, the Final

Office Action admits that the combination of Bottomley and Reznik "fail[s] to explicitly teach

estimating the received signal quality based on the scaled estimate of inter-symbol

interference." Although the Final Office Action asserts that Reznik "does suggest" such a

teaching, none of the cited portions of Reznik make any reference at all to an estimate of inter-

symbol interference in the received signal. Rather, as discussed above, Reznik teaches instead

a method for cancelling interference <u>without</u> making any estimates of signal quality, inter-symbol

interference, or the like from the received signal. At most, Reznik teaches that a "feedback

interference computation" [block 43 of Fig. 9] produces a <u>residual</u> interference vector $\tilde{c}(m)$.

[Reznik, ¶¶ 0074-76.] Because Reznik does not teach (or suggest) the estimation of inter-

symbol interference in the received signal, it is clear that Reznik also does not teach or suggest

estimating a received signal quality based on such an inter-symbol interference estimate. The

rejections of all the pending claims are improper for this reason as well, and should be

withdrawn.

<u>Neither Bottomley nor Reznik, alone or in combination, teach or suggest "a cancellation</u>

<u>metric comprising a scalar value representing characterized or measured inter-symbol</u>

<u>interference cancellation performance of the receiver"</u>

Independent claim 1 is directed to a method that includes "scaling [] estimated inter-

symbol interference by a cancellation metric comprising a scalar value representing

characterized or measured inter-symbol interference cancellation performance of the receiver. Independent claims 17, 31, and 45 have corresponding limitations.

The Final Office Action admits at page 9 that "Bottomley fails to explicitly teach scaling the estimated inter-symbol interference by a cancellation metric comprising a scalar value representing characterized or measured inter-symbol interference cancellation performance of the receiver." The Final Office Action then asserts that Reznik "suggests" scaling of estimated ISI by such a cancellation metric, citing Equation 10 and claim 49 of Reznik. This assertion is incorrect.

First, Reznik's equation (10) does not disclose (or suggest) scaling an estimate of inter-symbol interference by a scalar value at all. Rather, Reznik's Equation 10, which is reproduced as follows:

$$\bar{d}(m) = \mathbf{S}(\bar{y} - \bar{c}(m)) \quad ,$$

teaches that a residual interference vector $\bar{c}(m)$, output by a feedback interference processor, is iteratively subtracted from the received signal, with the difference multiplied by <u>matrix</u> $\mathbf{S}$. In fact, none of the components of Reznik's Equation 10 are scalar values.

Furthermore, contrary to the Office Action's assertion, there is no teaching or suggestion in Reznik that any of the components of Reznik's Equation 10 is a cancellation metric <u>representing characterized or measured inter-symbol interference cancellation performance of the receiver</u>. In fact, Reznik is utterly silent with respect to ISI cancellation performance of a receiver, or with respect to characterizing or measuring such performance. Indeed, the Final Office Action asserts that the matrix $\mathbf{S}$ corresponds to the claimed cancellation metric. There is no support for this assertion in Reznik. Rather, Reznik teaches that $\mathbf{S}$ is calculated directly from estimates of the system channel impulse response [*see* Reznik ¶¶ 0091-92], completely without regard to the interference-cancellation performance of a particular receiver.
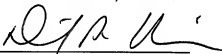
In a previous response, Applicant amended each of the claims to clarify that the cancellation metric comprises "a scalar value representing characterized or measured inter-symbol interference cancellation performance of the receiver." The applicant is disappointed that this clarification appears to have been all but ignored in the present Final Office Action, which simply states at page 9 that Reznik's "Matrix S [is] such that scaling performs cancellation of inter-symbol interference ISI." This showing falls far short of demonstrating that Reznik suggests that Reznik's matrix S represents characterized or measured ISI-cancellation performance of a receiver. Because neither Bottomley nor Reznik, alone or in combination, disclose the claimed cancellation metric, the rejections of all the pending claims are improper and should be withdrawn.

Conclusion

Applicant has demonstrated above that the rejections of the pending independent claims are improper for at least four reasons. To avoid the needless expense and time delay from an appeal, Applicant respectfully requests reconsideration of the pending claims, in view of the above arguments and the arguments previously submitted, and withdrawal of the pending rejections.

Respectfully submitted,

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